

longest, and furnished with distinct teeth; anal fin with fewer rays: it besides grows to a larger size. The descriptions of continental authors are not sufficiently minutè to identify this species.

These fish are found in Loch-Lomond in great numbers, where they are named *Powans* or *Freshwater Herrings*. They are caught from the month of March until September with large drag nets, and occasional instances have occurred in which a few have been taken with a small artificial fly; a minnow or bait they have never been known to touch. Early in the morning and late in the evening large shoals of them are observed approaching the shores in search of food, and rippling the surface of the water with their fins as they proceed. In this respect they resemble in their habits those of the Loch-maben Vendace and the common saltwater herring. They are never seen under any circumstances during the middle of the day. From the estimation these fish are held in by the neighbouring inhabitants, they are seldom sent far before they meet with a ready sale, and are entirely unknown in the markets of Glasgow. In the months of August and September they are in best condition for the table, when they are considered well-flavoured, wholesome, and delicate food. They shed their spawn in October and December, and remain out of condition until March*.

XVII.—*An account of a Journey to, and a Residence of nearly Six Months in, the Organ Mountains, with Remarks on their Vegetation.* By Mr. GEORGE GARDNER.

(Communicated by the Author to Sir W. J. Hooker.)

HAVING packed up all the collections which I made in the neighbourhood of Rio de Janeiro, and left them in the city to be forwarded in the first ship for London, I started on the morning of the 25th of December for the Organ Mountains. The peaks which receive this appellation are part of a mountain range stretching from beyond Bahia in the north to Bue-

* Communicated to the Royal Society of Edinburgh, when specimens of all the *British Coregoni* were at the same time exhibited.

nos Ayres in the south. The name which the Portuguese have bestowed on them (*Serra dos Orgãos*) originated from a fancied resemblance which the peaks, which rise gradually the one above the other, bear to the pipes of an organ. Having learned that two or three English merchants, whose families had gone up to the mountains for the summer months, were about to start to spend the Christmas holidays with them, it was with much pleasure I accepted an invitation to accompany them in their boat. One of them was George March, Esq., the gentleman at whose "Fazenda" I was to live while remaining on the mountains.

It was midday before we could leave the city, and under the influence of a strong sea breeze we reached Piedade, the landing place, at half-past three, the distance from the city being about twenty miles. The day was a most delightful one, in consequence of which, and of the many verdant little islands among which we were constantly gliding, the passage was so pleasant that I almost regretted its shortness. At Piedade, mules from Mr. March's fazenda were waiting for us and our luggage; and after a short stay for the arrangement of the latter we commenced our land journey. The road from Piedade to Magé, a village about four miles distant, leads through a flat, sandy, and in several places marshy plain, covered with low trees and bushes, principally *Melastomaceæ*, *Malvaceæ*, and *Myrtaceæ*, and great abundance of *Selinum terebinthifolium* (Raddi). In the hedges, by the road side, I saw several species of *Cissus*, *Bignonia*, and *Paullinia*, and in moist places many plants of *Dichorizandra thyrsiflora* in beautiful flower. The sandy fields were covered with a large species of *Cactus*, among which many plants of *Fourcroya gigantea* (Vent.) were to be seen throwing up their flowering stems to a height of twenty and thirty feet. From Magé to Freschall, a distance of fourteen miles, the road is still flat, but winds round many low hills, the sides of which are covered with *Mandiocca* plantations. We arrived at Freschall at half-past seven o'clock p.m., and remained there for the night.

Next morning by break of day we again continued our journey. At about two miles from Freschall the ascent of the mountains begins. From thence the distance to Mr. March's

fazenda, which stands at an elevation of three thousand one hundred feet above the level of the sea, is twelve miles. During the whole way the road is very bad, and in many places so steep that it is with considerable difficulty the mules make their way up it. Indeed to one unused to travel on such roads, which have more the appearance of the bed of a mountain torrent than a pathway for beasts of burden, many parts of it appear impassable; but he is soon undeceived by the slow yet sure manner in which the mules pass over the worst portions of it, especially if left entirely to themselves. During the whole ascent the road passes through a dense forest. The magnificence of these forests cannot be imagined by one who has not seen them and penetrated into their recesses. Those remnants of the virgin forest which still remain in the vicinity of the capital, although they appear grand to the eye of the newly-arrived European, become insignificant when compared with the mass of giant vegetation that clothes the sides of the Organ Mountains. Many of the trees are of immense size, their trunks and branches covered with myriads of parasites, consisting of *Orchideæ*, *Bromeliaceæ*, Ferns, *Peperomiæ*, &c. I have since ascertained that a great proportion of the largest of these trees are species of *Ficus*, *Myrtus*, *Laurus*, *Melastomaceæ*, and *Leguminosæ*. Some of them have their trunks encircled by twiners, the stems of which are often thicker than what they surround. This is particularly the case with a species of *Ficus*, called by the Brazilians *Cipo Matador*. It runs straight up the tree to which it has attached itself, but at the distance of about every ten feet it throws out from each side a thick clasper, which curves round, and closely entwines the other stem. As both the trees increase in size, the pressure ultimately becomes so great, that the supporting one dies from the embrace of the parasite.

At the base of the mountains the underwood principally consists of shrubs belonging to the natural orders *Melastomaceæ*, *Myrtaceæ*, *Compositæ*, and *Rubiaceæ*, among which are many large species of herbaceous ferns and several palms. About the middle palms and tree-ferns abound, some of the latter reaching to a height of not less than thirty feet. At an

elevation of about 2000 feet a large species of bamboo (*Bambusa Tagoara*, Mart.) makes its appearance. The stems of that gigantic grass are often eighteen inches in circumference, and attain a height of from fifty to sixty feet. They however do not grow perfectly upright, but are much bent, the tops of them sometimes nearly reaching to the ground. By the road side I saw many herbaceous plants in flower, which I had not then an opportunity of collecting.

We reached Mr. March's fazenda early in the forenoon. It being Christmas-day, we found his slaves, who amount to 100 in all, performing a native dance in the yard before the house. His estate embraces an extent of country containing sixty-four square miles. The greater part of it is still covered by virgin forests; what is cleared of it consists of pasture land, and several small farms for the cultivation of Indian corn, *fiagrens* (French beans), and potatoes. Plentiful crops are yielded by the two former, but the produce of the latter is neither so abundant nor so good as it is in England. He has also near to his house a large garden, under the management of a French gardener, in which all the European fruits and vegetables grow tolerably well. Many of these he has been at much trouble and expense in introducing from the Old World. From this garden he sends regular supplies of vegetables to the Rio market, and they are by far the best that are to be found in it. The most fertile part of the estate is situated between the higher chain of the Organ Mountains and a range of smaller mountains nearly parallel with it. Through this valley there runs a small river, about the size of the Kelvin at Glasgow, which is fed by several small streams from the mountains.

At this elevation the seasons are much better marked than they are at Rio. On my arrival I found that summer was just setting in, and consequently I was just in time to secure the first flowers of the season. Two months earlier I was told that I should have met with but few plants in flower. As my excursions extended in all directions, to a distance of from ten to twenty miles from Mr. March's house, my collections will give a tolerably accurate knowledge of the vegetable produc-

tions of this part of the country. In the following short sketch I shall merely mention what are the most common plants, which are peculiar to a few well-marked situations.

1st. *Marshes*.—The shrubby vegetation of marshes consists chiefly of *Melastomaceæ*, some of which are beautiful large-flowered species of *Lasiandra*, which rival the *Rhododendrons* in the richness of their colours. Among these are also to be seen a few species of *Myrtaceæ*, and several fruticose and subfruticose species of *Vernonia*. The herbaceous plants consist of *Compositæ*, the most common one of which is a large white-flowered species; several *Utriculariæ*; a *Drosera*; different species of ferns, one of them a fine *Osmunda*; many species of *Begonia*, *Cyperaceæ*, *Gramineæ*, and terrestrial *Orchideæ*.

2nd. *Pastures*.—The turf of these consists of different species of *Gramineæ*, principally of the genus *Chloris*, but it is with labour that pastures can be kept from running into a mass of shrubs and underwood, from the rapidity with which plants of these characters usurp the soil. Hence all the pastures which exist on the Organ Mountains are artificial, not natural. The shrubs which spring up most commonly are various species of *Melastomaceæ*, *Myrtaceæ*, *Croton*, *Rubiaceæ*, *Leguminosæ*, *Solanum*, *Myrsineæ*, *Samydeæ*, *Vismia Brasiliensis*, *Lantana*, *Malvaceæ*, &c. The suffruticose and herbaceous plants which are met with in greatest abundance in pasture lands, consist of numerous kinds of *Compositæ*, embracing species of *Vernonia*, *Eupatorium*, *Baccharis*, &c.; a few of *Hyptis*, *Rubiaceæ* and ferns. Of the latter, *Pteris caudata* is by far the most troublesome.

3rd. *Cultivated lands*.—The plants of these places are a species of *Phytolacca*, *Sonchus oleraceus*, *Tagetes minuta*, *Capsicum*, *Ageratum conyzoides*; a repent species of *Polygonum*, *Chenopodeæ*, *Richardsonia scabra*, and *Stellaria media*.

4th. *Bushy places*. (Capœra).—The plants belonging to this division are what have sprung up in land which many years had been under cultivation. They consist principally of small trees and shrubs, of various sizes, and are always very different from what constituted its original vegetation. Here may be observed several species of *Lasiandra* and other shrubs belonging to the natural order *Melastomaceæ*; an arboreous

Vernonia, and various species of *Inga*, *Cassia*, *Solanum*, *Croton*, *Myrsineæ*, *Ægiphila*, *Myrtaceæ* and *Lantana*, *Cerasus sphaerocarpa*, *Clethra fagifolia*? *Cestrum* of different species, and, principally by the sides of rivers, *Datura arborea*; among these grow many herbaceous plants and climbing species of *Compositæ* and *Leguminosæ*. Among the shrubs of this division I met with a species of *Ilex*, perhaps *Ilex paraguayensis*, the leaves of which are used by the blacks as a substitute for tea. I did not see it in flower, and could only meet with two specimens, having a single fruit on each. In habit it is a very upright growing shrub, about fifteen feet high; where the ground is rather swampy a fine species of *Talauma* prevails. It forms a tree from fifteen to thirty feet high, and its large green leaves and large pale yellow flowers render it one of the most striking trees I have ever met with. The flowers are highly odoriferous, and a single tree can be discovered by the sense of smell alone at a distance of more than half a mile when the wind blows in the direction from it. In swampy situations one or two species of *Laurus* are also found.

5th. *Virgin Forests*. 1st. *Trees*.—So far as I have been able to ascertain, these consist for the most part of numerous species of *Palmae*, *Laurus*, *Ficus*, *Cassia*, *Bignonia*, and *Solanum*. *Chorisia speciosa* (St. Hilaire), and many myrtaceous trees also abound in the dense forest, among which I found three species of *Campomanesia*, two of them in fruit, but from the other I obtained good specimens. I likewise observed several trees of a large size belonging to the natural order *Proteaceæ*. Specimens from one of them will be found in the collection of dried plants from the Organ Mountains, marked No. 615. The various species of *Laurus* form fine large trees, and when growing, as they often do, in an open part of the forest, they remind the European of the oaks of his native country. They flower in the months of April and May, at which season the atmosphere is loaded with the rich perfume of their small white blossoms. When their fruit is ripe, it forms the principal food of the Jacutinga, (*Penelope Jacutinga*, Spix,) a fine large game bird. Some of the largest trees of the forest are species of *Ficus*; one, with an enormous height and thickness of stem, is called by English here the *buttress*

tree, from several large thin plates which stand out from the bottom of the trunk. They begin to jut out from the stem at the height of ten or twelve feet from the bottom, and gradually increase in breadth till they reach the ground, where they are connected with the large roots of the tree. At the surface of the ground these plates are often five feet broad, and throughout not more than two inches thick. The large *Cassia* have a striking appearance when in flower; and as an almost equal number of large trees of *Lasiandra Fontanesiana* and other species belonging to the same natural order are in bloom at the same time, the forests are then almost one mass of yellow and purple from the abundance of these flowers. Rising amid these the pink-coloured flowers of the *Chorisia speciosa* can be easily distinguished. This is a large tree, with a stem, covered with strong prickles, from five to six feet in circumference, unbranched to the height of twenty or thirty feet. The branches then form a nearly hemispherical top, which, when covered with its thousands of beautiful large pink-coloured blossoms, has a striking effect when contrasted with the masses of green, yellow, and purple of the surrounding trees. Many of these large trunks afford support to various species of climbing and twining shrubs belonging to the natural orders *Bignoniaceæ*, *Compositæ*, *Apocynææ*, and *Leguminosæ*. The stems of these climbers frequently assume a very remarkable appearance. Several of them are often twisted together and dangle from the branches of the large trees like ropes, while others are flat and compressed like belts: of the latter description I have met with some six inches broad, and not more than a quarter of an inch thick. Two of the finest of these climbers are the beautiful large-flowered *Solandra grandiflora*, which diffusing itself among the branches of the largest trees of the forest gives them a magnificence not their own; and a showy species of *Fuchsia*, which is very common, attaching itself to all kinds of trees, and often reaching to a height of forty and fifty feet.

2nd. *Shrubs*.—The shrubs which are found in the virgin forests principally consist of numerous species of *Rubiaceæ*, *Myrtaceæ*, *Melastomaceæ*, and Palms; *Franciscea ramosissima*, (Pohl), and another species allied to Pohl's *F. hydrangeæ*-

formis, *Cybianthus cuneifolius*, (Mart.) which is very abundant, and several fruticose *Compositæ*.

3rd. *Herbaceous Plants*.—These are often very numerous, particularly in moist shady situations. They consist of great profusion of ferns, suffruticose and herbaceous species of *Begonia*, some of them with very large foliage, and rising to the height of twelve and fifteen feet. In dry rocky places *Bromeliaceæ*, *Orchideæ*, and *Dorsteniæ* prevail, mixed with suffruticose and tuberous-rooted species of *Gesneriaceæ*.

Having thus given a general view of the vegetation of the Organ Mountains at an elevation of three thousand feet above the level of the sea, I shall now offer an account of two journeys which I made to the high peaks of that range. The estimated altitude of the loftiest point is six thousand feet, and consequently is three thousand feet above Mr. March's house, which is the highest on the range. The only botanists who have visited his estate are Langsdorff, Burchell, and a German of the name of Lhotsky. The former explored the vegetation in the neighbourhood of the fazenda during a few weeks, about twelve or thirteen years ago; Mr. Burchell remained six weeks, nine or ten years since; and Lhotsky two or three weeks only, five years ago. None of them botanized higher than the level of Mr. March's house, and the knowledge of this fact made me the more anxious to spend a few days among the high peaks for the purpose of making collections of their vegetable productions. I had fixed on the early part of April for going up, but the whole of that month was so wet that I was prevented at that time from putting my design into execution. May however having set in fine, I set off on the morning of the 6th accompanied by four negroes. One of them, a Creole upwards of sixty years of age, was to act as guide. This old fellow is one of the most active, not only of blacks, but of any individual of his years I have ever seen. From his infancy he had been used to the woods, and is one of the best hunters on the estate. The other three were engaged to carry provisions and to assist in taking home my collections. We entered the forest at about a mile to the north of Mr. March's house, and our route for that day was

nearly due west. Two years ago an English merchant for mere curiosity ascended to within a few hundred feet of the summit of the highest peak, guided by the same old black who accompanied me. For the first few miles we were able to keep on the path which he had made, but from the rapid growth of the bamboos and underwood through which it had been cut, it was as difficult to force our way through it as if no path had ever been made. Our progress was but slow, one of the blacks requiring to go before in order to cut a way. Some of the bamboos are of immense size; I measured several more than four inches in diameter, and their height could not be less than sixty or seventy feet. The internodes are always half filled with water, obviously secreted by the plant itself. Prince Maximilian in his travels speaks of this fluid as forming a most refreshing beverage to hunters and others in the woods. I have frequently tasted it, but always found it so nauseous that the most urgent thirst alone would compel me to drink it.

Near the entrance of the wood we passed a large species of *Copaifera*, the lower part of the stem of which had been pierced for the purpose of obtaining the balsam which exudes from it. For several miles our route lay nearly parallel with a small river, along the banks of which grew some very large trees, among which I observed a large species of *Laurus* and another of *Lasiandra*, both in flower. The underwood consisted of great variety of shrubby *Melastomaceæ*, *Myrtaceæ*, *Rubiaceæ*, and suffruticose species of *Begonia*. Beautiful ferns and handsome flowered *Begoniæ* were trod down at every footstep. The stems of the large trees were covered with *Bromeliæ*, *Tillandsiæ*, *Orchideæ*, ferns, and climbing species of *Begonia*. Occasionally a large plant of *Cereus* (*Cactus*) *truncatus* was to be seen hanging from the stem of some large tree covered with hundreds of beautiful pink blossoms. Among the shrubs I found *Cybianthus cuneifolius* (Mart.), and collected specimens both in flower and in fruit. The latter not having been found by Martius I have been enabled to note its structure, respecting which the only fact worthy of being noticed in this place is the circumstance of its embryo having four cotyledons: as none of the species of the order are men-

tioned either by Decandolle or Lindley to be possessed of this conformation, it seems to be an anomaly. The plant grows in shady places of the forest, and reaches to a height of from four to six feet, with the leaves growing for the most part at the ends of the long slender branches. In crossing over a hill about five hundred feet high, the low trees on the top of it were literally covered with various species of *Orchideæ*, but I found nothing among them that I had not previously met with. Several large plants of *Oncidium divaricatum* were in flower, as were also a small *Maxillaria* and some small *Epidendra*. On this hill I observed two species of *Bambusæ* different from the large kinds in the woods below. One of them had the internodes considerably shorter in proportion to the size of the plant, and was altogether much smaller. The other species was still less, its stem not being more than a quarter of an inch in diameter, but continuing of that thickness to a height of fifteen or twenty feet. The getting through these was the most difficult part of our day's journey. At 4 p.m. we reached a place by the side of a small stream, where I determined to remain for the night; and while the blacks were occupied in cutting wood for a fire and in preparing some food, I went up the course of the little stream in search of plants; as I estimated this spot to be about 4500 feet high, and naturally expected a different vegetation from what there was in the plain below. The first plant that attracted my attention was what I then imagined to be a fine individual of *Cereus truncatus* in full flower hanging from the under side of the trunk of a large tree that was bent over the stream. As I wanted to add a few specimens of it to my collection I soon managed to put myself in possession of the whole plant, when to my surprise and delight I found it to be a new species. I felt glad that I had taken the plant down and not passed it by as I had once intended. In habit it is quite like *C. truncatus*, but when the flowers are examined it proves abundantly distinct, in its four winged ovary, its straight and regular, not oblique and irregular, flower, the deeper and more delicate hue of the inflorescence, and the pink not white colour of its filaments. I have named it *Cereus Russellianus* in honour of His Grace the Duke of Bedford. A

little way further up, by the side of a small water-fall, and on a moist slanting bank near it, I found great quantities of a fine dark red-flowered *Amaryllis*, of which I collected specimens and took up a good many of the roots. It is perhaps undescribed, as I can find nothing to agree with it in my books, but this may soon be ascertained as I have sent home specimens and a great many bulbs. The place where it grows is one of the most charming I have ever seen. The bed of the stream is about ten feet broad, but it is only during heavy rains that it covers this space. At this time the stream was little more than perceptible. The water falls over three successive shelves of granite, each about eight feet high; along the stream at the bottom of the fall there are several middle-sized trees, the branches of which are festooned with the long branches of the same *Fuchsia* as grows abundantly below, loaded with splendid crimson flowers. By the side of the fall are several bushes of a large flowered species of *Lasiandra*, and along with them a few of a red-blossomed *Virgularia*, and a broad thick-leaved species of *Clusia*, loading the atmosphere with a delightful odour arising from its large white inflorescence. Beneath these grows the *Amaryllis* already mentioned, an *Eryngium*, and several *Bromeliaceæ*. On the face of the rocks I saw several mosses, but none of them in fruit. Having gained the upper part of the fall I found a space extending to a considerable distance on each side and for some way up the mountain, destitute of trees;—nothing but bare portions of rock with occasional masses of low shrubs and herbaceous plants. Among these, the beautiful *Zygopetalon Mackaii*, and the odoriferous *Maxillaria picta*, were not the least common. Darkness now beginning to set in, I returned to the encampment, and found a large fire lighted and something prepared to eat. After dinner I put the plants which I had collected during the day into paper. The evening was so fine that I considered the erection of a hut unnecessary, and lay down about 8 p.m. on a few palm leaves by the fire, with my poncho wrapped round me, to pass the night.

When I arose next morning at day break I found the thermometer at 46°. While breakfast was preparing I again went out to botanize, but added little more than a few ferns to my

collection of the previous evening. Our journey of the first day to the place where we now halted was of very gradual ascent. To-day we commenced the *ascent proper* of the peaks. Leaving behind all that was not actually necessary to be taken with us, we commenced our journey by passing the little waterfall and walking up the bed of the stream along the gently sloping fall of a granite rock. The ascent of several parts of this was rather difficult, having to crawl up on our hands and knees. After half an hour's hard work we reached a comparatively flat wooded spot. On the steep part I collected in moist places an *Eriocaulon*, a *Gentiana*, and a few other curious little plants, and saw also a small *Drosera*, but could meet with none of it in flower. In passing through the wood above mentioned I saw great plenty of my new *Cactus* growing on the stems of the larger trees. Emerging from the wood we again encountered another steep place almost entirely covered with a large species of *Bromeliaceæ*, above which rose a few plants of a fine large scarlet-flowered shrubby species of *Salvia* and a pale blossomed *Virgularia*, while, twining among thin stems was a small-leaved and small white-flowered species of *Apocynææ*, of all of which I collected specimens. On a nearly bare portion of the rock I also found an herbaceous plant belonging to the natural order *Gentianeæ*. It grows from a foot to a foot and a half high, with thick succulent glaucous leaves, the upper ones connate, from out of which proceed about half a dozen pedicles each bearing a single flower. The inflorescence is large, the calyx much inflated and tinged with purple, particularly on one side. The pale yellowish-white corolla is nearly hidden by the calyx. The stamens are six. As I believe this to be the type of a new genus I have called it *Gastrocalyx connatus*. The seed-vessels were all too young to enable me to procure ripe seeds of it, a circumstance which I much regretted. Passing this place we again entered a wooded district of the mountain. Here we found many anta (tapir) paths, as we had also done the day previous, in the woods below along which we passed, thus rendering our progress much quicker than it otherwise would have been, as the branches above only required to be cut away to make a good road. Judging from the abundance of the tracks which we

here met with, the tapir must be a very common animal in this remote and solitary part of the mountains. Here they are as yet out of the reach of the hunter, who commits great havoc among those of the lower woods, and there is also abundance of herbage to supply them with food. In passing through this forest one of the blacks shot a Jacutinga, (*Penelope Jacutinga*, Spix), and I collected a few orchideous plants and specimens of a large yellow-flowered *Senecio*. Leaving this wood we came upon a slanting boggy piece of ground, in ascending which I found a fruticose proteaceous-like species of *Compositæ*, perhaps a *Baccharis*; a *Vaccinium* and *Andromeda* (?) both in fruit; two species of *Melastomaceæ*, one of them with large purple flowers and small leaves; abundance of the *Eriocaulon* which I met with further down; a *Utricularia*, a *Hyptis*, and a *Salvia*. Judging from the top of the mountain we were now at an elevation of more than five thousand feet. In the wood through which we last passed there were no large trees, and those of another which we had now entered were still smaller, the highest not exceeding fifteen or twenty feet. Leaving it we commenced the ascent of a very steep place covered with low shrubs, among which were three species of *Melastomaceæ* which I had not before found, a frutescent *Lobelia*, and at a considerably higher elevation the ground was principally covered with *Gaultheria hispida* (Sprengel), and a *Weinmannia*, of which I could only find three specimens in flower. The *Gaultheria* grows from two to three feet high, and the *Weinmannia* a little higher. We continued our way for more than an hour through this stunted vegetation, making but slow progress, although we were much facilitated by having the path of the tapir to crawl up. By following this tract we reached a point whence we had a beautiful prospect of the surrounding country, particularly to the eastward, where as far as the eye could reach it was one mass of conical shaped hills, one ridge only rising to a considerable elevation above the rest. The point which we had attained was the summit of one of the many peaks which form the range of the Organ Mountains. At less than a quarter of a mile distant stood the highest peak, and certainly not more than three hundred feet above us; but between the two peaks lay a densely wooded ravine

about two hundred feet deep. It being now two o'clock p.m. it was too late to think of ascending it that day; so I determined to remain where we were for the night and attempt it next day, but the blacks refused to do so on account of no water being nearer than a little above where we had slept the night previous. As I could not force them to remain, I was consequently, much against my will, obliged to abandon all idea of reaching the summit. Not having a barometer with me I took up a thermometer that I might ascertain the boiling point of water; but unfortunately broke the tube before I could do so. On the very top of the peak, a granite rock almost destitute of soil, I found a great patch of a large bulbous-rooted plant: it was not in flower, but had all the appearance of being an *Amaryllis*. I carried some away and have since sent home a good many roots of it. After partaking of a slight repast we commenced our downward journey, and reached our encampment just as evening was setting in. After preparing a little tea for myself I put my day's collection of specimens into paper, and again lay down wrapped in my poncho to enjoy some rest, being not a little fatigued with the toils of the day. At 6 a.m. next morning the thermometer indicated 47°. After breakfast I brought all my collection of parasites, bulbs, &c. together, and allotted to each negro his burden, the weight of which caused no little grumbling among them; but when they saw me load myself as heavily as any of them they said nothing. We started at 8 a.m. and followed the route by which we had come. The only thing which I picked up on my way back worthy of notice was a new species of *Zygopetalon* growing on the stem of an old tree. It is not so fine as either of the other two Brazilian species. Its petals and sepals are greenish-yellow, the labellum white, streaked at the base with purple. I have named it *Z. Murrayanum* in honour of my excellent friend Mr. Murray of the Glasgow Botanic Garden. At 4 o'clock p.m., groaning under our loads, we reached the fazenda.

- Being anxious to obtain a few more plants of the new *Cactus*, and also a larger stock of those bulbous plants which I had met with on my visit to the mountains, as well as to add more specimens to my collection of dried plants, I made prepara-

tions on the evening of the 14th of May for starting on the following morning. On this journey I was again accompanied by my old guide "*Pai Phelipe*" and the other three blacks. We left the fazenda at 8 a.m. and reached our former encampment at 3 p.m. After dinner I went out to botanize, taking three of the blacks with me. One of them I left at the little water-fall to collect bulbs of the *Amaryllis* formerly mentioned as growing there; the other two accompanied me to assist in collecting specimens; and I was thus enabled to add considerably to my previous stock; but the only new thing I met with was a species of *Melastomaceæ*, a tree about ten or twelve feet high covered with small white flowers. After getting all my specimens put into paper I once more lay down on a few palm leaves covered with my poncho to pass the night. We arose next morning by break of day, when I found the thermometer at 50°. As there was little to be had on the top of the mountain but the bulbous roots already mentioned, I sent two of the blacks up to bring as many of these as they could carry, intending myself to walk slowly with the other two to the bog in which I formerly found the *Vaccinium*. During my walk I gathered plenty of *Cereus Russellianus*. This plant is a good example of nearly allied species representing each other in different regions. During the four times that I passed through the woods in my journey to and from the mountains, I always found *Cereus truncatus* confined to the dense virgin forests below the elevation of 4500 feet, while from that point to nearly 6000 feet *Cereus Russellianus* alone was seen. Little new was added to my number of species on this visit, but I much increased my former limited stock of specimens. Early in the afternoon the two blacks and myself returned to the spot from whence we had started loaded with collections. The day was one of the most delightful I ever remember to have witnessed, quite like one of the finest days of an English summer. The sky was clear and unclouded, and the atmosphere being free from that haze which often in the finest weather renders the view of distant objects indistinct, allowed us to obtain a perfect and well-defined prospect of the outline of the high mountains far to the eastward. Shortly after the other two blacks returned from the top of the mountains.

One of them brought me a single specimen of a beautiful little *Alstroemeria* in flower. I had observed it on my former visit, but the few plants which I then met with were in fruit, and as the seeds were ripe I carefully preserved them. Having got all my specimens safely put into paper, I lay down shortly after seven, little dreaming what a miserable night I was to spend. I had just fallen asleep when I was suddenly awakened by a deluge of rain which was pouring down. One of those sudden and heavy showers which are only witnessed in tropical countries had commenced. Had we been in an open place we might have seen it approaching and been able to reach some shelter before it came on, but the tops of the trees by which we were covered had prevented this. I never was abroad in such weather. In a few minutes our large fire was extinguished and the place was swimming. I had laid a small bag of *Amaryllis* roots under my head as a pillow, which I now was obliged to use as a seat, after having covered myself with my poncho, which although a good one was but a poor protection for such a night. In half an hour the small stream beside us, which during the day had only a few inches of water, came pouring down like thunder. To add to our misery, the night was pitch-dark, so that we could not see to remedy our situation. What a night I spent may be imagined when I mention that I sat in one position from half-past seven in the evening till nearly three the next morning, under an incessant deluge of rain. A more perfect picture of patience I flatter myself could not be witnessed. About three it began to abate a little, and being in a shivering condition from the cold and wet, we made several attempts to kindle a fire, but without success; everything being too wet to burn, and we were therefore obliged to content ourselves without one. By seating myself at the root of a tree, and leaning my back against it, I managed, at four different intervals, to obtain about an hour's sleep, but constantly awoke, cold and shivering. Never was I so glad as when the first rays of daylight were seen streaming through the trees; and as soon as we could see, we lost no time in preparing to return home. Shortly after we started the rain began, and continued till we reached the fazenda, which we did at two p.m. On my way home I col-

lected a few specimens of a digitate-leaved species of *Mikania*.

Up to the beginning of June I still continued to add to my stock of dried specimens, and on the 9th of that month left the mountains, with all my collections, for the city of Rio de Janeiro.

GEO. GARDNER.

Rio de Janeiro, July 14th, 1837.

XVIII.—*Contributions to the Natural History of Ireland.* By WILLIAM THOMPSON, Esq., Vice-President of the Belfast Natural History Society.

No. 6.—*On the Birds of the Order Insessores.*

[Continued from p. 26.]

THE PIED WAGTAIL, *Motacilla alba*, Linn.*—Is a common species in this country, and though said to leave the northern to winter in the southern parts of England, is in the northern counties of Ireland permanently resident. One disposition towards a movement may however be witnessed, which is their collecting in the autumn in flocks, commonly consisting of about thirty individuals. Thus have I seen them at the end of September, on the borders of Lough Neagh, and have so observed them come to roost upon the reeds (*Arundo phragmitis*), and the adjacent ground, on the banks of the river Lagan, until after the middle of November; but I am not aware whether the portion of these birds so congregated ever move southwards. Mr. R. Ball has likewise observed them in large flocks in the south of Ireland about Youghal, during the month of October. Towards the end of January the song of the wagtail is frequently heard in the north, and occasionally

* The pied wagtail of Ireland is identical with the *M. alba* of British authors generally, and with the *M. Yarrëlli* of Mr. Gould. By this author a new name has been applied to it, as he states, in consequence of a species peculiar to the temperate portion of continental Europe being the true *M. alba* of Linnæus, and from which the British species is distinct. (Mag. Nat. Hist. vol. i. p. 459, New Series.) The two characters which form the description of *M. alba* in the 'Systema Naturæ,' are found in our bird. These are "pectore nigro, rectricibus duabus lateralibus dimidiato oblique albis," t. i. p. 331, 13th ed.